

# CLIMATE CHANGE VULNERABILITIES, RISKS AND OPPORTUNITIES IN THE AMECEA REGION



**A Contribution to the Association of Member  
Episcopal Conferences in Eastern Africa (AMECEA)  
Conference 2022 in Dar es Salaam, Tanzania**



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ISBN 978-9976-5674-9-6

June, 2022

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## LIST OF ABBREVIATIONS AND ACRONYMS

AMECEA	Association of Member Episcopal Conferences in Eastern Africa
AR5	5 <sup>th</sup> Assessment Report of the Intergovernmental Panel on Climate Change
ARC	Alliance of Religion and Conservation
CBO	Community Based Organization
CDM	Clean Development Mechanism
COP	Conference of the Parties
CETA	Civic Education Forum in Tanzania
CSJE	Centre for Social Justice and Ethics
CUEA	Catholic University of Eastern Africa
CYNESA	Catholic Youth Network for Environmental Sustainability in Africa
FAO	Food and Agriculture Organization
FBOs	Faith Based Organizations
GHGs	Green House Gases
IPCC	Intergovernmental Panel on Climate Change
KAS	Konrad-Adenauer-Stiftung
KCDE	Kilimanjaro Consortium for Development and Environment
NASA	National Aeronautics and Space Administration
NCA	Norwegian Church Aid
NDCs	Nationally Determined Contributions
NGO	Non-Governmental Organization
SCCs	Small Christian Communities
SDGs	Sustainable Development Goals
SWOC	Strengths, Weaknesses, Opportunities, Challenges
TEC	Tanzania Episcopal Conference
TYCS	Tanzania Young Catholic Students
UNFCCC	United Nations Framework Convention on Climate Change
VICOBA	Village Community Bank
WMO	World Meteorological Organization

# TERMINOLOGY

## Climate

Climate refers to a relatively long-term weather in a certain area or region, usually averaged over a period of 30 years. More consistently, climate refers to the mean meteorological variables usually stretching across a period from months to millions of years (World Meteorological Organization 2022).

## Climate Change

According to the Inter-Governmental Panel on Climate Change (IPCC) Fourth Assessment Report, climate change “refers to a change in the state of the climate that can be identified (e. g. using statistical tests) by changes in the mean and/or the variability of its properties, which persist for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity” (IPCC 2007). In the same, but slightly difference vein of thought, the United Nations Framework Convention on Climate Change (UNFCCC) considers Climate change mainly to be anthropogenic, that is, caused by human activity, either directly or indirectly. Hence, it alters the very configuration of the atmosphere to natural climate variability detected over a corresponding lapse of time (UNFCCC 2022).

## Vulnerabilities/Risks

From the climate change context, vulnerabilities or risks entail an ensemble of negative impacts, in all its different forms. Among others, these include multiple quantitative and qualitative climate change stress burdens, compulsion, weaknesses, dangers, challenges, threats, hazards, perils, etc. (NB: These will be clearly identified below in part one of this book).

## Multidisciplinary

This refers to a critical interdisciplinary scientific analysis and approach relating to and involving several subjects, disciplines, or different branches or fields of professions or expertise or schools of thought (Collins Online Dictionary 2022).



## PREFACE BY KONRAD-ADENAUER-STIFTUNG (KAS)

The world is faced with enormous challenges posed by the effects of climate change. This is particularly true for the African continent where the impacts of climate change are being felt across various sectors. At the Konrad-Adenauer-Stiftung (KAS) we work for people to be able to live self-determined lives in freedom and dignity. Based on our values, we contribute to helping Germany meet its growing responsibilities throughout the world. This is particularly critical and urgent for sub-Saharan Africa, which is extremely rich in natural resources. Hence, African states can demonstrate the transformative and comprehensive economic potentials in the use of renewables by using elements such as wind, water and solar power.

According to the latest 5<sup>th</sup> Assessment Report (AR5) by the Intergovernmental Panel on Climate Change (IPCC), there is strong evidence that the impacts of climate change are already striking Africa hard. Findings of AR5 include the following: Climate change poses challenges to economic growth and sustainable development and to the various facets of human security. The health, livelihoods, and food security of people in Africa are all affected by climate change. For example, the degradation of natural resources due to both overexploitation and climate change will contribute to increased conflicts over the distribution of these resources. Many of the interacting social, demographic, and economic drivers of observed urbanization and migration in Africa are sensitive to climate change impacts.

With more and more people moving to cities, a special focus must be on the growing cities in Africa. Cities face climate change from two sides: as drivers of climate change and as victims of climate change. The necessary decoupling of economic and urban development from CO<sub>2</sub> emissions must take place especially here, otherwise the physical damage in cities caused by climate change could set back development progress by many years. A 2009 study by the International Institute for Environment and Development (IIED) titled “Climate Change and the Urban Poor” assessed the risk and climate change resilience in 15 of the world’s most vulnerable cities, including coastal cities like Dar Es Salaam, where the biggest threats are rising sea levels, flooding, and coastal erosion.

We at the Konrad-Adenauer-Stiftung (KAS), together with local partners, aim to raise awareness for issues pertinent around climate change amongst political and societal stakeholders. We work for people to be able to live self-determined lives in freedom and dignity. Based on our values as a German political foundation with Christian values, we contribute to helping Germany meet its growing responsibilities throughout the world. For this, amongst others, we organise regional discussion forums, international conferences and seminars, and produce reports, professional publications and studies, all in close cooperation with national and international partner organisations. Climate-related key risks are to be analysed by a way of political dialogue in order to elaborate project-oriented sustainable solution models at national, regional and international levels to influence political decision makers in the long-run.

This booklet adds on to and follows-up on previous KAS activities on continental, regional and national level. On continental level, KAS supported several expert roundtables on the outcomes of the Conference of the Parties (COP) and its meaning for Africa. The aim of these roundtables was to investigate in an interdisciplinary manner, what challenges and opportunities arise from the agreement and how law, politics, finance, and other related mechanisms can further climate change justice ahead and enfold protection mechanisms for the most vulnerable. In 2016 for example, such a discussion took place in South Africa titled “COP21 in Paris: Challenges and Opportunities for Africa” which included, amongst others, one of the few African co-chairs of the IPCC working groups. In 2017, KAS published its global “Climate Report 2017” which looked at the topics around the necessary engagement of the private sector and on climate finance in the G20 countries (Chevallier, Ruppel and Feltes 2017).

On regional level, KAS together with the East African Community held an International Conference in 2014 titled: “The Challenges of Climate Change Adaption and The Potential of Sustainable Energies In The East African Community: The Perspectives of East Africa Civil Society Organizations After COP 19” (Konrad Adenauer Stiftung & The East African Community 2014). In 2016, another multistakeholder conference titled “Climate Change Renewable Energies and Sustainable Use of Natural Resources in East Africa” was held in Arusha, Tanzania. These international

conferences underscored particularly the role of climate finance in the entire climate change discourse. In collaboration with the Uongozi Institute and Climate Strategies, an International Global Climate Policy Conference in Dar es Salaam, Tanzania titled: “Paris Agreement in Practice: What Next for Africa and Developing Countries?” was held. This conference underpinned new techniques for adaptation and capacity building, finance and concrete implementation of the Nationally Determined Contributions (NDC’s).

On national level, KAS partnered for example with its partner organization CETA in 2013 and 2014 (Civic Education Teachers’ Association in Tanzania) in conducting a multidisciplinary conference at the Stella Maris University College in Mtwara. It underscored different nuances and interconnected aspects particularly between good governance and sustainable management of resources in Tanzania (CETA & KAS 2013) including “climate goods” and non-renewable natural goods. In 2014, KAS and CETA held another conference for the Lake Zone titled: “Sustainable Use of Natural Resources” (CETA & KAS 2014) at the St. Augustine’s University of Tanzania in Mwanza (SAUT). This interdisciplinary conference and workshop underpinned the broad-spectrum trajectory between natural resources and environmental (ecological) goods including “climate resources” and climate justice. These are a few key highlights showing KAS’ unique endeavours and potentials in the entire climate and environmental space.

The gathering of the 2022 Eastern African Bishops Conference AMECEA in Dar es Salaam, Tanzania with the conference topic “**NURTURING OUR COMMON HOME: Living ‘Laudato Si’ – Towards enhancing Integral Human Development in the AMECEA Region**” offers a great opportunity to contribute to the deliberations with this timely booklet. Especially in the last years, severe droughts and floods have shown that the AMECEA region (which covers Ethiopia, Eritrea, Kenya, Malawi, Tanzania, Zambia, Sudan, Uganda, Somalia, and Djibouti) is an area extremely prone to the effects of climate change. It is of great appreciation that the AMECEA conference chose very wisely to engage with this topic during their triennial gathering. AMECEA and its congregation could be a catalyst to spread the word amongst their home constituencies and educate about challenges and responsibilities in the field of climate change and the Christian values of preserving the God’s creation.

Last, but not least, I would like to thank our longstanding partner, Dr. Aidan Msafiri from the Kilimanjaro Consortium for Development and Environment (KCDE), for partnering with KAS for this booklet.

A special thanks goes also to the Tanzanian Episcopal Conference (TEC) and my KAS colleagues Mr. Damas Nderumaki and Mr. Jan Borchert for supporting this booklet.

I wish all readers an stimulating and insightful read and hope that the contents of this booklet will guide the readers in their daily practical work in reaching out to their communities at Diocesan level.

## **Tilman Feltes, PhD**

*Tilman Feltes is the Country Director of KAS Tanzania. He holds a PhD in Public Administration from the Urban Futures Centre at Durban University of Technology (DUT). Before his posting to Tanzania, he worked with KAS headquarters in Berlin, Germany as Policy Advisor, in which context he also served as Acting Head of the Regional Programme on Energy Security and Climate Change in 2018. Between 2012 and 2017 he worked in South Africa, amongst others as Deputy Head of the KAS Country Office as well as for the German Development Cooperation (giz) and the Democracy Development Programme (DDP).*

# INTRODUCTION

Fundamentally, recent highlights on the climate status both regionally and globally indicate a higher prevalence of human-induced (anthropogenic) climate extremes and vulnerabilities than ever before. From the AMECEA region (Ethiopia, Eritrea, Kenya, Malawi, Tanzania, Zambia, Sudan, Uganda, Somalia, and Djibouti) scenario analysis, those vulnerabilities and impacts have reached catastrophic proportions particularly between 2019 and 2022. All these have far reached short-, medium-, and long-term negative socio-human, economic, gender, infrastructural, nutritional, cultural, religious and existential implications and repercussions. The AMECEA region is one of the most affected regions in terms of catastrophic human-induced climate change scenarios, hence the urgent need to act against these threats. Briefly, climate change is ‘the magnifying glass’ of most of our regional geo-economic, political, technological, educational, ecclesial, social, and human disasters in the AMECEA region and worldwide. As Paul Polman, CEO Unilever affirms, “the biggest risk to African growth is climate change” (Rompel 2021). We cannot simply ignore this! Consequently, a multi-stakeholder approach is a critical moral and human obligation for holistic credible and sustainable livelihoods, communities, and eco-resilience. This requires a new culture of collective responsibility at all levels of church and society.

What are the major anthropogenic causes of CO<sub>2</sub> and GHG’s emissions in each AMECEA country, every diocese, parish, Catholic school(s) and universities? Why are the Catholic Dioceses, Faith Based Organizations (FBO’s) not engaging seriously in their stewardship moral obligation encapsulated in Gen. 2:15 and Pope Francis’s Encyclical “Laudato Si”? What are the inherent educational, catechetical, religious, ecclesial, organizational gaps, (“*lacunae*”)? Could we aptly affirm that it is the opportune (“*Kairological*”) moment that we need “green” Bishops, Catholic Dioceses, Catholic Schools, Institutions, Professionals, Catholic NGO’s, Catholic CEO’s, Catholic Managing Directors, Small Christian Communities (SCCs), Seminarians, Nuns, Brothers, Laity, Ministers, Parliamentarians? Do we all agree that we are all guests on Earth and there is no AMECEA region B, or Planet B, or MT. Kilimanjaro B? Do we see and duly respect the intrinsic “nexus” *continuum* and interdependency between “*Oikos*” (house/

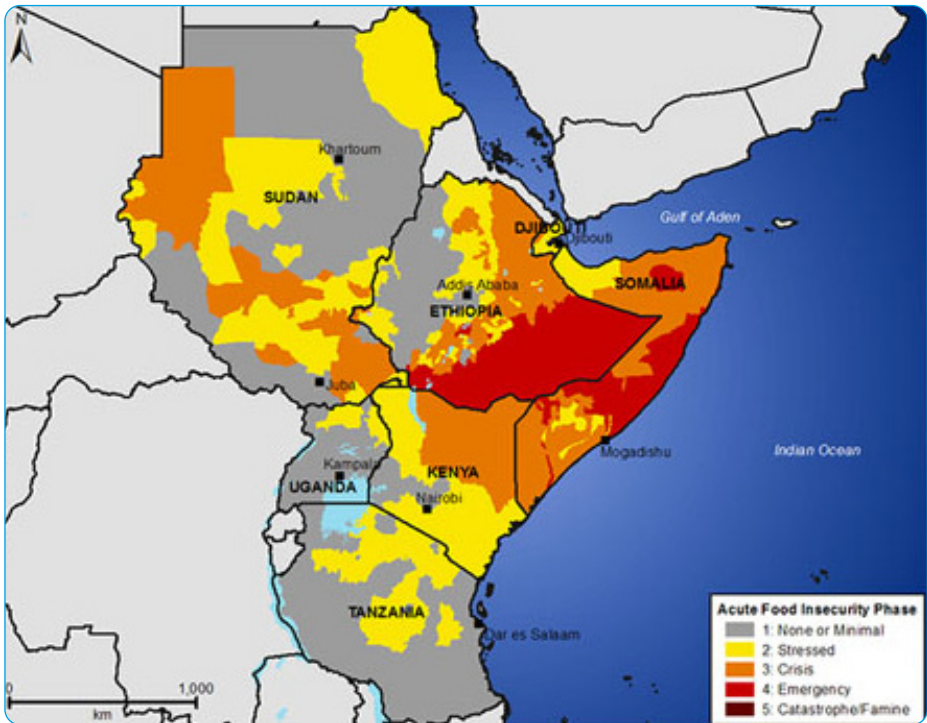
the world), “*Oikologia*” (ecology/environment), “*Oikonomia*” (economy/sustainable livelihoods) and “*Oikumene*” (different faiths/religious)? Is Africa (AMECEA) and “*Homo Africanus*” “*tabula*” of earth-keeping values, eco-prayers, liturgies, visions, eco-indigenous skills and technologies? How can the AMECEA regional body synergize with Catholic and Non-Catholic Climate Change Organizations and governments in Eastern Africa for calibrated positive results and opportunities against destructive climate change vulnerabilities nationally and regionally? Does the AMECEA family see the need for collaborative and innovative opportunities in and among Catholic environmental professionals, “gurus”, visionaries, activists, NGOs, CBOs? Do we have the courage to make a critical post-mortem as regards the strengths, weaknesses, opportunities and challenges (SWOC) of our individual implementation of Pope Francis’ Encyclical, “*Laudato Si*” *hic et nunc*?

Do we see and take seriously, here and now, climate change vulnerabilities and risks as a pastoral and educational priority in Catholic homilies, education, evangelization, developmental strategies? Which concrete practical strategic plans and take away do we have? Do we underscore after the July 2022 AMECEA Plenary on “**NURTURING OUR COMMON HOME: Living ‘Laudato Si’ – Towards enhancing Integral Human Development in the AMECEA Region**” in Dar es Salaam, ensuing from our moral and spiritual obligations in reducing and eventually “managing” our carbon footprint individually on one hand and promotion of climate change justice and eco-friendly lifestyles and visions on the other?

This booklet entails four major parts. Part One uncovers multiple quantitative and qualitative vulnerabilities and scenarios linked with climate change, particularly from the AMECEA region. Part Two introduces some transformative action-based contributions by multiple stakeholders responding to climate change challenges based on the Catholic Church’s “Laudato Si” approach. In Part Three, the Nationally Determined Contributions (NDCs) regime is introduced, with special attention to Africa and especially Tanzania. Lastly, Part Four presents the fundamental trajectories and characteristics of the climate justice regime as a whole. This booklet will also act as a starting point to link with development partners to follow up on the AMECEA commitments.

# PART ONE

## 1. FACTS ON CLIMATE CHANGE VULNERABILITIES AND RISKS IN THE AMECEA REGION



Source: ClimateAi, 2022

### 1.1 AMECEA Region is Warming Faster than Global Average

These include unprecedented catastrophic flooding (El Nino) scenarios on one hand, and uttermost drought and hot spells, particularly around the Horn of Africa (Somalia, Sudan, Kenya, Tanzania), on the other. It has been revealed that the warming trend for 1991-2020 has been remarkably far higher and worse than the previous 1961-1990 scenario

in and around all of Africa's sub-regions (IPCC Working Group 1 2021) including the Eastern region (AMECEA countries). According to NASA Earth Observatory, the snow and ice particularly on Mount Kilimanjaro has drastically declined when compared to February 1993 and February 21<sup>st</sup>, 2000 (ICPAC 2021). Almost 80% of its ice has disappeared. In less than 20 years the rest might be lost as well. Unfortunately, major cities in the AMECEA region have been experiencing an increase in mean temperatures since the pre-industrial era. Hence, since “1860 Addis Ababa (Ethiopia) has warmed by 2.2oC, Khartoum (Sudan) by 2.09oC, Dar-es-Salaam (Tanzania) by 1.9oC and Nairobi (Kenya) by 1.9oC” (ICPAC 2021). These have scenes have led to increase in more heat in water levels particularly along the Indian Ocean coasts and AMECEA region's lakes as a whole.

## 1.2 Critical Food/Nutritional Vulnerabilities and Insecurities

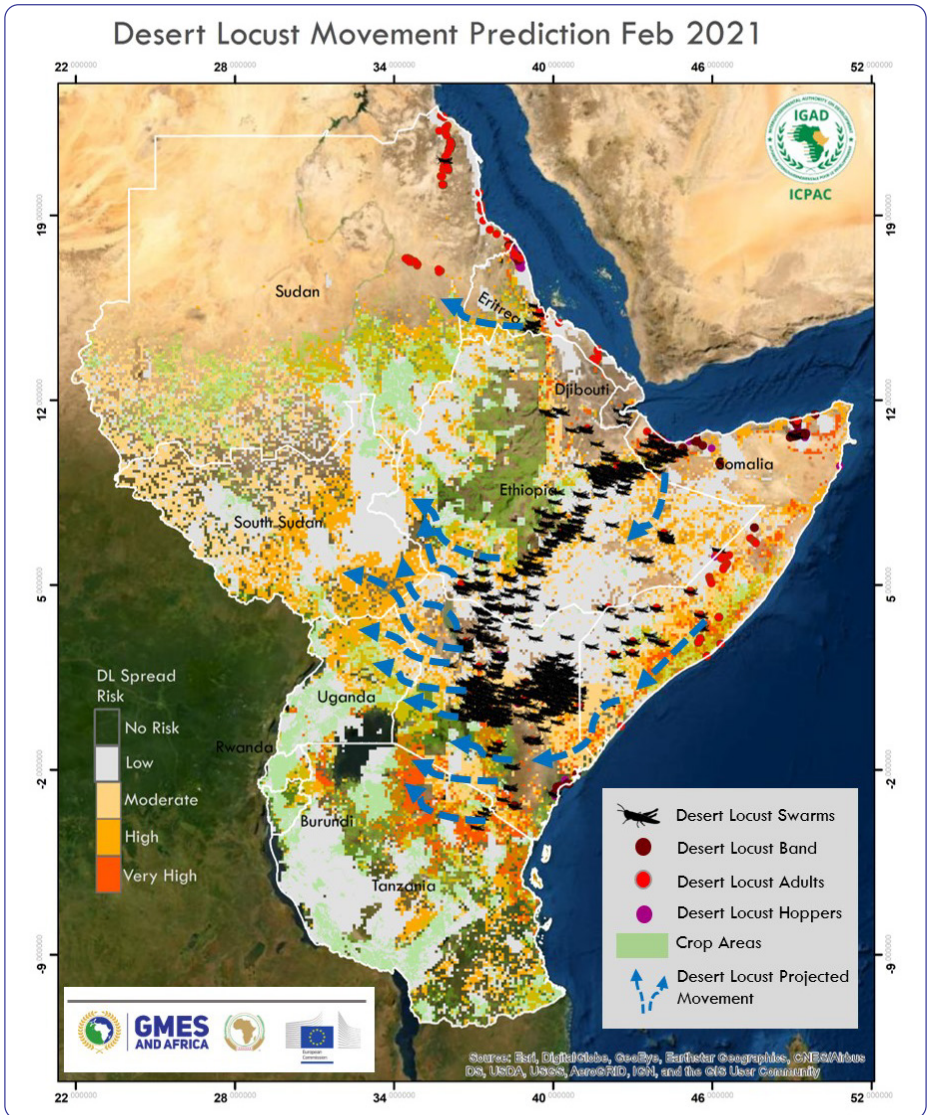
According to recent UN Food and Agriculture Organization (FAO) report on the AMECEA region, there “has been a decline in the long rainfall season between March and May, and the progressive moisture deficit has resulted in decreased crop yield of long-life grains, such as maize... Consequently, the low production of maize, which accounts for (13.1%) daily calories per Capita in Burundi, (19.5%) Ethiopia, (9.3%) Uganda, (25.7%) Tanzania, (33.3%) Kenya, significantly affects the availability of food supply...” (Waithaka et al. 2013, p. 93). Briefly, severe heat and drought stress substantially reduce crop productivity and eventually affect peoples' health, nutritional needs, and fluctuation in crop prices.

## 1.3 Vulnerabilities due to Increased Outbreak of Desert Locusts

In a recent research study by the World Meteorological Organization (WMO No. 1275:9), it has been observed and affirmed that, high “precipitation and abnormal vegetation growth provided unusually favourable conditions for the feeding and breeding of desert locusts [...] Ethiopia and Somalia were the countries most affected by desert locusts [...]



In 2020, Ethiopia lost an estimated 356,286 tons of cereal, affecting about 806,400 farming households, 197,167 hectares of cropland and 1.35 million hectares of pasture and browse” (WMO 2021, p. 25). Kenya, Tanzania and Somalia have had such devastating desert locust invasions as well.



Source: Reliefweb, 2021

## 1.4 Human Health Vulnerabilities and Risks

The ensuing ever growing heat stress has remarkably given rise to more risks of water borne and vector diseases through increased rates of virus and parasite development in vectors. Among others, these include cholera, typhoid, Amoebiasis, Giardia, Shigella, E-co Ui, Cryptosporidium, Rift Valley Fever, Schistosomiasis, Meningococcal meningitis, etc. In Kenya for instance, “malaria accounts for 50 percent of household expenditures on health while in Tanzania, the diseases are the cause of the greatest number of lives lost, accounting for 16 percent of reported deaths. In Ethiopia, six epidemics occurred between 1958 and 1998 and between 2003 and 2004 malaria epidemics are estimated to have affected 15 million people in three federal regions...” (USAID 2012, p. 2).

## 1.5 Water Resources Security

The current asymmetry or disproportion scenarios of water distribution in the AMECEA region in particular pose an existential dilemma both to humans, animals (soil-fauna) and plants (soil-flora). Admittedly, greater intensity and longevity of droughts are affecting water quantity, quality, security, availability, and sovereignty. Further, reduced water resources due to prolonged droughts in Eastern Africa have affected Hydro-Electric Power plants and dams for several years.

## 1.6 Ecosystem Vulnerabilities

Admittedly, ever increasing mean temperatures above the 1.5°C pre-industrial level has far reaching devastating consequences on AMECEA region’s terrestrial resources. These include destruction and disappearance of grasslands, for coastal and marine biodiversity, wetlands, coral reefs, fisheries’ resources, wildlife, and natural habitats. From a Tanzanian perspective for instance, it is argued that there is a very close link between desertification, deforestation, and depletion of biological species. A good example are the Usambara Mountains, where various species of birds are said to be extinct as a result of unprecedented destruction of their habitat.

Furthermore, a wide array of animal species, particularly leopards and buffaloes, has simply disappeared in most parts of the Kilimanjaro, Usambara and Pare Mountains” (Msafiri 2007).

## 1.7 Development, Infrastructure and Management Risks

Undoubtedly, direct and indirect impacts of climate change scenarios in the AMECEA region have both quantitative and qualitative short, medium and long-term consequences to regional efforts for development infrastructural sustainability and management plans and strategies. These affect countries individually and the region collectively. Among others, loss of human life, human capital, foreign money for development, the vicious cycle of extreme poverty coupled with destruction of human settlements, bridges, industries, etc. Low resilience for adaption and mitigation scenarios poses insurmountable developmental bottlenecks in the implementation of the Sustainable Development Goals (SDGs) and disaster management mechanisms in the AMECEA region as a whole.

In short, these critical climate change vulnerabilities and risks are, more or less, commonplace in the AMECEA region as this region shares common meteorological, socio, economic, and geographical features and characteristics.

Let us now look at the different multi-stakeholder integrative models, endeavours, and potentials as solutions against the myriad of climate change vulnerabilities and risks.

## 2. CLIMATE CHANGE JUSTICE: MULTISTAKEHOLDER CONTRIBUTIONS: The Catholic Church's Endeavour's and Potentials

### 2.1 Global Level

First, the Catholic Social Teaching and biblical heritage and corpus, succinctly emphasize the moral (ethical) and divine trajectories of the created world and climate goods. These are particularly its fundamental tenets: the life and dignity of all human persons, fundamental option for the poor and vulnerable, care, solidarity and stewardship responsibility with and for all God's creation and collective human and ecological rights. (Gen. 1:27-31, 2:15, Plasm 104:29-30, Rom. 8:18-28, Mt. 25:35-40, 1Cor. 12:7, *Rerum Novarum* 11891, *Quadragesimo Anno* (1931), *Pacem In Terns* (1963), *Vat II Gaudium et Spes* (1965), *Laborem Exercens* (1981) etc.

Second, St. Francis of Assisi's canticle of creation "*The Sister/Mother Earth*" has been for centuries now inspirational and transformational in and for ecological protection and sustainability efforts and tradition. Briefly, St. Francis of Assisi is an outstanding Catholic model for integral ecology and climate justice.

Third, on the 24<sup>th</sup> May, 2015 Pope Francis' Encyclical "*Laudato Si (Praise be to you, my Lord)*" (Pope Francis 2015) revolutionized the entire climate change justice landscape. It became the "*Magna Charta*" for ecological integrity and climate justice sustainability globally.

From the African continent's context, Aidan G. Msafiri, book "**HOW RELEVANT AND TIMELY IS LAUDATO SI FOR AFRICA**" (Msafiri 2019) re-emphasizes on Pope Francis' Encyclical as a whole. This is also reinvigorated in "*Mit der Schöpfung Leben Atmen*" (Msafiri 2021) Indeed; this is one of the latest key research publications on "*Laudato Si*" and climate change justice and ethics globally.

## 2.2 Regional (AMECEA) Level

First, as a regional body of the Catholic Church in Eastern Africa, its mission is specifically to inspire and empower God's family in AMECEA region to a credible and prophetic witness to Christ, by promoting unity, justice, peace and solidarity in an integral or holistic manner. This entails the fundamental integral aspects of Christian anthropology. That is, soul, body, mind, will power, ecology, economy, and ecumenism.

Second, recently (April 2022) in an interview with the General Secretary of the AMECEA countries Rev. Dr. Anthony Makunde, particularly on the implementation of Pope Francis Encyclical "*Laudato Si'*" affirmed that this ecclesial regional organization held a general Assembly in Addis Ababa in 2018 and collectively agreed that climate change challenges are real and pathetic in the region. They underscored the intrinsic nexus and interdependency particularly between climate change energy resources and poverty. These hinder AMECEA's regional efforts particularly towards holistic and integral human development. Consequently, it decided to choose climate change and sustainable integral human development to be the main theme of AMECEA's General Assembly in Dar-es-Salaam in July, 2022.

Third, the methodology suggested by AMECEA effectively responding to the impacts of climate change in the region included the SEE-JUDGE-ACT-triad through research analysis both quantitatively and qualitatively. This model and its policy framework have to be implemented as an AMECEA priority and thematic endeavour both on the regional level and in individual countries.

Fourth, from a policy and professional point of view particularly in the stewardship of God's Creation, in 2014 AMECEA launched "A Catholic Environmental Toolkit for Catechists and Seminarians" (CSJE & ACR 2014) facilitated by The Centre for Social Justice and Ethics (CSJE) and Alliance of Religious and Conservation (ARC) centred at the Catholic University of Eastern Africa, (CUEA).

Last but not least, from AMECEA's youth pastoral perspective, there are highly credible Catholic youth endeavours, potentials and movements specifically against climate change vulnerabilities nationally, regionally and internationally. The Catholic Youth Network for Environmental Sustainability in Africa (CYNESA) is increasingly becoming a “game changer” in this regard. Among others, from 10<sup>th</sup> to 13<sup>th</sup> February, 2020 it held a very relevant meeting in Lusaka, Zambia on Integral Human Development and climate change was the top agenda (CYNESA 2020).

### 2.3 National (TEC) and Diocesan (Moshi) Levels

First, from the Catholic national level, the Tanzania Episcopal Conference (TEC) gave special attention and commitment to environmental protection in its 2017 Lenten Pastoral Letter “*Furaha ya Injili ya Uumbaji (The Joy of The Gospel of Creation)*.” (TEC 2017) This letter underscored the centrality and relevance of our collective responsibility for environmental protection.

Second, in the same vein of thought, the then President of Tanzania Episcopal Conference, Rt. Rev. Bishop Tarsicius Ngalalekumtwa on behalf of the Catholic Bishops strongly observed that, “*Tanzania is experiencing negative effects of climate change, ...Dear citizens, this is supposed to be a rainy season yet we have very little rain in some areas of the country while the rest have no rains at all...*” (AMECEA 2017).

Third, last year (2021) while launching the 20<sup>th</sup> AMECEA Plenary On “Environmental Impact and Sustainable Human Development” in Mwanza, Tanzania, Archbishop Gervas Nyaisonga the President of Tanzania Episcopal Conference (TEC) highlighted on the importance of everything that surrounds us: “*This planet is all that we have; if we do not protect it, we will be in danger because destroying the environment is destroying human life. We as human beings are entrusted with the responsibility of governing all of God’s creation...*” (Agenzia Fides 2021).



*VICOPA Women from Ludewa District, Tanzania plants tree seedlings into bags (Photo by Dalphina Rubyema)*

Fourth, from the Catholic Diocese of Moshi perspective, both climate change policy and ongoing awareness programs have been highly emphasized. It is a central agenda in the Catholic Diocese of Moshi's 2016-2021 Strategic Plans. Pastorally, for instance all children for first communion and confirmation sacraments are obliged to at least plant a tree and take care of it as one of the formative prerequisites before receiving these sacraments.

Further recently, on 30<sup>th</sup> March 2022, young priests between 1-10 years of priesthood got a rigorous seminar on the Relevance of “*Laudato Si*” and Environmental Protection in their Parishes, institutions and communities. This is an ongoing formative program to all priest, religious, youth and children.

Last but not least, on the 22<sup>nd</sup> April, 2022 a seminar was given to 700 TYCS students gathered for the Easter Conference, at Marangu Secondary School Moshi. Parallel to this, tree planting activities followed as well. These are but few highlights pertaining to climate change awareness raising in and by the Catholic Diocese of Moshi.

## 2.4 The Kilimanjaro Consortium for Development and Environment (KCDE)

Based on its plausible vision statement KCDE is becoming a national and global game changer in Kilimanjaro region, Tanzania and East Africa by planting and preserving 4 million trees by 2024.

In prior to the outbreak of COVID-19 pandemic, 2019, KCDE conducted “*A Mapping Study On The Multifunctionality and Sustainable Management of Church-Owned (Abrahamic) Forests in Tanzania, A Case Study of Selected Regions of Coastal, Tabora, Manyara, Kilimanjaro, Lindi and Mtwara*”. This study is the second in Africa, after one in Ethiopia done by the Orthodox Church! As for its justification and rationale, the qualitative and quantitative long-term and manifold contribution of forests and trees is central and key to all life forms. Trees and forest are what we humans and non-humans depend on since creation to the end of times. Indeed, this can never in any way be exaggerated or ignored. Among others this include conducive weather



and climate conditions, multiple socio-economic and medicinal benefits and potentials, biological, spiritual, financial, security, cultural, energy and sustainability resources as a whole. Tanzania like other African countries is one of the most affected nations in terms of climate change. There are facts and fears.

Admittedly, besides government and other forests managing institutions and organizations, FBOS, churches and other communities have played key and practical role especially in sustainable management of forests in Tanzania. Admittedly, the spiritual and religious value for forest, environmental and biodiversity conservation is incredibly potent and transformative. Forests play profound multiple qualitative roles among Christians through old age systems of ecological beliefs, values, taboos, motivations, liturgies, prayers and spiritual checks and balances. These go beyond mere qualitative and empirical categories and criteria. Undoubtedly, the Christian vision and life new is a century's long spiritual comparative and added advantage (Msafiri 2019).

KCDE imparts eco-friendly and climate justice values skills and lifestyles to children, pupils, students, youth, women, and citizens of all faiths through eco-responsibility, eco-awareness, eco-advocacy, eco-inclusivity, eco-resilience and eco-sustainability (For more see – [www.kilicde.org](http://www.kilicde.org)).

Briefly stated, these are but few key highlights particularly on KCDE's endeavours and potentials for climate justice, integral development and sustainable growth through research, publication, and community outreach. Other relevant interdisciplinary endeavours include interfaith model on climate change (e.g. through Norwegian Church Aid in Tanzania), the "Cradle-to-Cradle (see Braungart & McDonough 2009) model, on climate justice, the "Eucharistic model", the Sacramental climate justice model(s) (Msafiri 2013) and many others!

## 3. NATIONALLY DETERMINED CONTRIBUTIONS (NDCs) REGIME AND ARCHITECTURE

### 3.1 Nationally Determined Contributions (NDCs)

This refers to a conscientious and systematic climate action plan taken by parties, i.e. countries, to cut greenhouse gas emissions and effectively adapt to climate vulnerabilities or risks. Indeed, this was particularly spearheaded by the 2015 Paris Agreement. The Nationally Determined Contributions' key goal is to initiate "a transformative shift to development that is greener and more sustainable [...] shifts in the different sectors of the economy and provide an opportunity for rethinking how a society produces and consumes" (UN 2021). It is based on "Bottom-up" approach as opposed to the "Top-down" one.

Among others, the justifying ground for the inception of the NDCs is the critical global climate urgency and "SOS" to decarbonize the planet by and through all parties on an equitable and sustainable basis. Methodologically through the use of best science, equity, smart climate innovation. Arguably, the NDCs are an integral component of the Paris Agreement whereby it demands each party or nation to prepare, (UN 2015) communicate and foster successive the NDCs in reducing climate vulnerability caused by the ever-worsening emissions (see Article 4 of the Paris Agreement). From a jurisprudential perspective, some elements of the 2015 Paris Agreement in relation to NDCs are legally binding, while others are not.

### 3.2 Nationally Determined Contributions Submission Status

The NDCs timeline framework originated from the 2015 Paris Climate Change Agreement. In Article 4,9 it suggests a five years' period as 'a common' time for the implementation of climate change measures as encapsulated in the NDCs. In this regard, for instance, if an NDC

was submitted in the year 2015, its time frame would be 2020. The Paris Climate Change Agreement calls on every nation to responsibly and transparently communicate and submit new NDCs and targets every year. Unfortunately, some aspects of the Paris Agreement are not legally binding. Nonetheless, the specific objective of the NDCs is to promote a global decarbonization process and eventually promote climate change mitigation and adaptation locally and globally.

### 3.3 Nationally Determined Contribution (NDCs) Legal Status

First, besides their strengths and potentials particularly in promoting collective global decarbonization and effective adaptation endeavours, not all elements of the Paris Agreement related to NDCs are legally binding. In most cases, the ambition factor, remains as a national resolve. Nonetheless, among others the following NDC related aspects are mostly procedural in character. Hence, legally binding for all parties as a whole. *“Prepare communities and maintain NDCs. Pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions. Provide information necessary for clarity transparency and understanding (CTU) in communicating NDCs. Communicate NDCs every five years. Account for NDCs and promote environmental integrity, transparency, accuracy, completeness, comparability and consistency and ensure the avoidance double counting. Regularly provide information on national inventories of emissions by sources and removals by sinks of GHG’s and information necessary to track progress made in implementing and achieving NDCs.”* (ECBI 2020, p. 14)

### 3.4 Contents of Nationally Determined Contributions

According to Article 4.2 of the Paris Agreement, parties must “include a mitigation contribution in their NDCs, as the most explicit provision with regard to the component of NDCs. The Lima call for action also invites Parties to consider communicating their undertakings in adaptation planning or including an adaptation component in their NDCs” (UN 2015). This article resonates directly or indirectly the trajectories of mitigation, adaptation, financial support, technology, transfer capacity building and clarification as well as transparency of measures and support are central and urgent.

### 3.5 Mechanism for Parties' Accountability

First, besides the diverse challenging and complex nature of mapping mitigation targets in their NDCs, the Paris Agreement unpacked multiple trajectories for accountability with and among Parties in particular:

*“Up-front information to be provided by Parties when submitting their NDCs (Article 4.8). Accounting by Parties of their NDCs (Article 4.13). Accounting by Parties of ITMOs (Article 6.2). Common modalities, procedures, and guidelines for the transparency of action and support (Article 13.13), which could include rules on the information to be provided by Parties under Article 13.7 on their progress in implementing and achieving their NDCs.” (UN 2015)*

Second, the UNFCCC has provided a profoundly systematic and user-friendly framework and guide for the submission of the NDCs by Parties. It entails creation of an UNFCCC user account; getting access to the interim NDC registry submission of NDC related documents and/or key information to the interim NDC registry publication of NDC related documents.

### 3.6 Tanzania's Nationally Determined Contributions

Tanzania's commitment to adapt and systematically implement NDCs is in line with article 4 of the 2015 Paris Climate Agreement to limit global warming to the 1.5°C per industrial level. The ever worsening quantitative and qualitative risks and threats posed by climate change cannot be over exaggerated. Indeed, it calls for new rethink and synergy. In his foreword to the renewed (July 2021) Nationally Determined Contributions for Tanzania, the Minister of State, Vice President's Office, Union and Environment, Hon. Selemani Said Jafu (MP), makes the following observations that this is an: *“extensive consultative process involving relevant sectors and stakeholders [...] The NDC will be implemented as Tanzania's incremental contribution beyond current efforts and upon availability of adequate and predictable financial and technological support from the international community. The United Republic of Tanzania is committed to effectively meet the objectives of the*

*NDC and engage in national and international processes to fast-track its implementation [...] to reduce greenhouse gas emissions economy-wide between 30-35% relative to the Business-As-Usual (BAU) scenario by 2030” (United Republic of Tanzania Vice President’s Office 2021).*

### **a) Adaption Contributions**

First, according to the National Determined Contribution report of July, 2021, the government of Tanzania envisages to “*embark on a climate resilient development pathway. In doing so, it will reduce the impacts of climate change variability and associated extremes as drought and floods [...] The adaption measures are expected to significantly reduce the risks of climate related disasters [...] Access to clean and safe water for total population in urban and rural areas will be increased from 86% and 67.7% respectively in 2015 to 100% by 2030. Based on a conservative and a worst-case scenario of 50cm and 1m sea level rise by 2100, the contribution will verifiably reduce the impacts of sea level rise to the islands and coastal communities, infrastructure and ecosystems including mangroves” (United Republic of Tanzania Vice President’s Office 2021, p. 7)*

Second, Tanzania’s adaption measures’ priority map will tackle multi-sectoral gaps and challenges prioritizing from agriculture, livestock, energy, coastal, marine, environment and fisheries, water, sanitation and hygiene, tourism, land use and human settlements development, health, infrastructure, disaster and risk reduction and management, gender mainstreaming, capacity building, research and systematic monitoring, technology development and transfer (United Republic of Tanzania Vice President’s Office 2021, p. 9-13)

### **b) Mitigation Contributions**

First, the Tanzanian government has conscientiously identified four critical sectors as priority areas. This is due to their enormous and significant capability towards decarbonization levels. Hence, “*Tanzania will reduce greenhouse gas emissions economy-wide between 30-35% relative to the Business-As-Usual (BAU) scenario by 2030, “whereby about 138-153 million tons of carbon dioxide*

*equivalent (MtCO<sub>2</sub>e)-gross emissions is expected to be reduced, depending on the baseline efficiency improvements, consistent with its sustainable development agenda. Priority mitigation sectors are energy, transport, forestry and waste management. These are amongst the sectors that contribute to GHG emissions in Tanzania currently, and are expected to increase...*” (United Republic of Tanzania Vice President’s Office 2021, p. 13).

Second, due to its vast and reliable natural gas endowments of about 57 trillion cubic feet of discovered reserves (by 2021) and over 100 million cubic feet, which have been exploited to produce 527 MW of electricity (United Republic of Tanzania Vice President’s Office 2021, p. 14), Tanzania is determined to embark towards an eco-friendly energy transition.

Third, from a waste management perspective, Tanzania’s government is mobilizing the private sector, stakeholders, and particularly communities, to spearhead greater and effective involvement of transforming waste in energy, new management models, site and waste disposal management systems, recycling, reuse, reduction, dump management systems and power generation programs.

Fourth, among others, there are critical and essential components for effective and efficient implementation strategies of Tanzania’s NDCs. These include **measurement, reporting and verification (MRV)** system, institutional arrangements and governance system, professional expertise and NDC data base (United Republic of Tanzania Vice President’s Office 2021, p. 19-21).

Last, other existing players and tools entail carbon credits through the Clean Development Mechanism (CDM), the REDD+ mechanism or Reducing Emissions from Deforestation and Forest Degradation. These are increasingly becoming wide-spread decarbonization and compensation alternative models particularly in poor and developing nations including Tanzania.

### 3.7 Some Critical Gaps and Discrepancies

#### a) **Ambition Gaps**

The current NDCs module or regime affects only about  $\frac{1}{3}$  of the targeted emissions reductions necessary to reach the bargained level. This is critical and urgent in substantially reducing the irreversible risks and vulnerabilities of Climate Change.

#### b) **Budgetary Gaps and Limitations**

A post 2030 critical climate change regime analysis shows that “*It is extremely unlikely that the goal of holding global warming to below 2°C can still be reached. Even if the NDCs are fully implemented, the carbon budget for limiting global warming to below 2°C will be about 80% depleted by 2030. Given currently available carbon estimates the available global carbon budget for 1.5°C will already be well depleted by 2030*” (ECBI 2020). In some cases especially in the Global South, access to climate finance has become impossible. This applies to financing implementation of the pledges as well. Mitigation and adaption funds are a case in point.

#### c) **The Business-As-Usual (BAU) Syndrome**

Indeed, it is an undeniable fact that, concerted and affective action particularly by sub-national, non-state actors, stakeholders, businesses, academia, and FBOs are extremely necessary and critical. Unfortunately, there is very limited, vague, and uncoordinated quantitative and qualitative data and information available about the role of such non-state actors in filling the emissions gap. Undeniably, these actors have incredible potential in our collaborative quest towards the de-carbonization of our planet.

#### d) **Policy Gaps**

Up to 2022, in Tanzania there is a multiplicity of both cost-ineffective and inconsistent NDCs policies, targets, action plans, strategies, pathways in different government sectors as well in conscientiously standardizing renewable or green energies.

Among others these include, solar, wind and geothermal energy production, as well as efficient and eco-friendly transport with trains, trams, cars, etc. These policy gaps need to be addressed further.

**e) Organizational & Planning Gaps**

Admittedly, there is lack of sufficient levels of transparency, trust, and accountability particularly on NCDs monitoring, reporting and evaluation regimes and systems. There is no multi-sectoral work plan with stipulated responsibilities, political will, financial sources and plans necessary for Measuring, Reporting and Verification (MRV) mechanisms in Tanzania. Non-governmental stakeholders and civil society is not consulted enough on planning and implementation of NDCs. Furthermore, in 2022 there is qualitatively and quantitatively very limited ethical “resilient corpus” and accountability especially with regard to credible monitoring, reporting and evaluation expertise and data base especially on adaption and resilience building targets and activities. Systemic corruptive practices are also commonplace.

**f) Lack of Adequate Capacity in Resource Mobilization and Technical Resilience**

Fundamentally, there is lack of an effective NDC resource mobilization toolkit in the many developing poor nations and Africa in particular. This includes relatively limited financial opportunities, lack of scientific credible data base and sources, weak governmental institutions, structures such as “think tanks” and “politicizing” of everything including climate change, NDCs, natural catastrophes, pandemics, etc. Last, there is still a notable huge gap on accessibility and sharing of information and technologies for an effective implementation of NDCs as a whole.



### 3.8 Nationally Determined Contributions: The Role of Cities in Climate Change Mitigation

Today, due to population increase and searching for employment, there is a rapid increase and growth of urban and semi-urban areas worldwide. This is parallel with quantitative increase of green-house gases and high pollution levels locally and globally. This is critical and alarming. Consequently, this calls for immediate and greater urgency particularly for collective urban engagement and action in addressing climate mitigation and adaptation. Indeed, cities in particular have qualitative and quantitative political, managerial, socio economic, constitutional, organizational, intellectual and governmental potentials and opportunities in bringing about positive and effective change against further urban based climate change vulnerabilities and risks as a whole.

Urban resilience as a means of enhancing climate change mitigation and adaption change particularly against climate related risks and vulnerabilities is critical and extremely urgent.

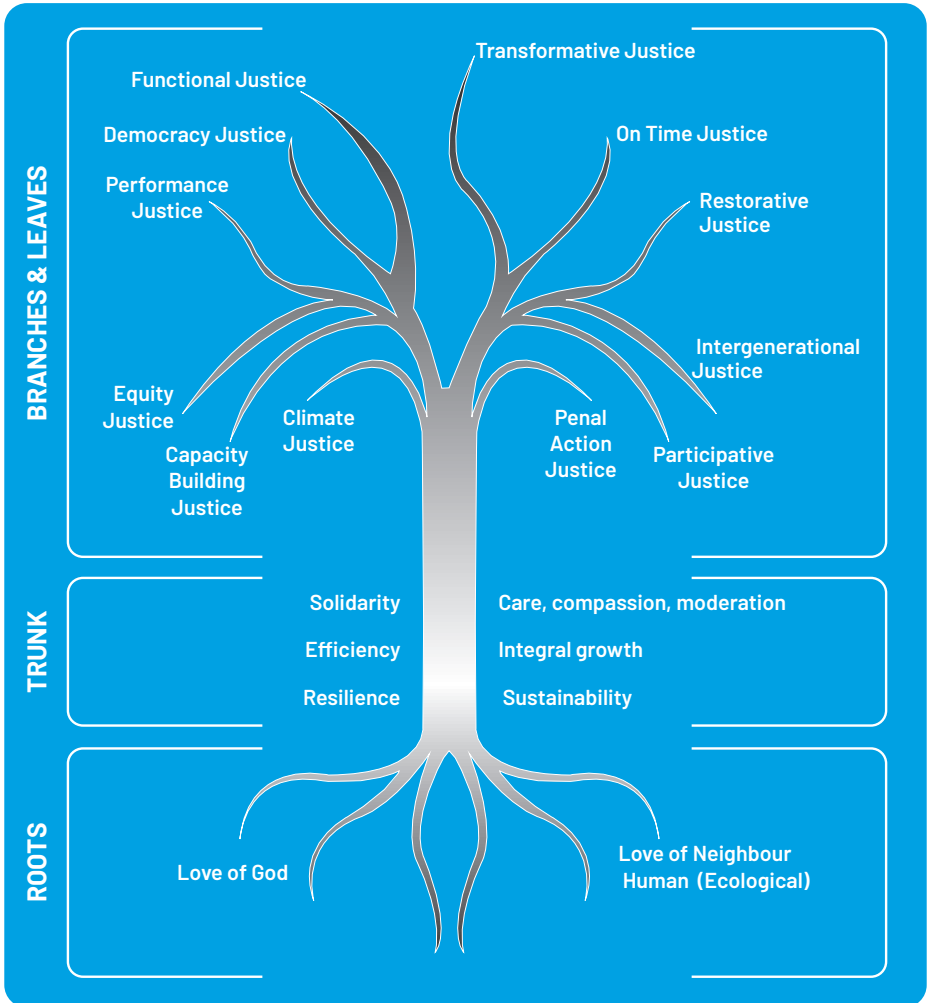
First, this will substantially alleviate further climate change related deaths, illnesses, disruptions of urban business undertakings, severe heatwaves, pandemics, loss of biodiversity, and coastal ecosystems, food insecurity and scarcity, and unsustainable rural-urban migration trends locally and globally.

Second, smart adaption has remarkable immediate benefits both to urban settings, and facilitates the provision of sustainable urban infrastructures, land use and resource management, and employment opportunities, as well as nurturing inter-sectoral partnerships and capacity building in risks and disaster management systems.

Third, efficient urban climate change mitigation and adaption plans have huge positive effects particularly in reducing and effectively responding to the ever-worsening urban related plastic, food, clothing, toxic chemicals, paper and transportation footprints. Hence, underpinning the critical nexus, potentials and opportunities in the implementation of Nationally Determined Contributions (NDCs), not only in and by developing nations like Tanzania and the rest of the AMECEA region, but also among developed industrialized countries.

# PART FOUR

## 4. THE TREE OF CLIMATE JUSTICE AND ETHICS: “ROOTS”, “TRUNK”, “BRANCHES” AND “LEAVES”



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This is specifically an ethical and value-based model embedded with multidisciplinary potentials and values in bringing about climate justice and sustainable growth. Indeed it should therefore be taken as an inspiring and motivating ethical and moral ‘toolkit’ particularly in our collective endeavours and new commitment towards climate change vulnerability awareness raising and accountability at all levels of church, community and socio-economic life.

#### 4.1 The Golden Rule as The Key “Root” (Mt. 22:37-39)

The Golden Rule is epitomized in and by all Abrahamic faiths (Judaism, Islam and Christianity). Hessel & Ruether 2000 holds that, “*the centre and zenith of all value-based approaches towards the creator, fellow human and the created world. It underscores both the verticalist and horizontalist trajectories, particularly of the human person towards God, environment, climate and sustainable living...*” (Hessel & Ruether 2000, p. 594).

#### 4.2 Climate Ethics “Trunk” as Fundamental and Resilient

This includes an ensemble of vibrant and resilient vitamins, values, traditions, ingredients, materials etc. particularly climate solidarity, care and common good, precaution, moderation, efficiency, revolution, eco-resilience, eco-sustainability, and integral human growth/development.

#### 4.3 Climate Ethics “Branches” and “Leaves” as Fundamental and Critical

These entail a key ethical, an edifice and a plethora of interdependent integral “branches” and “leaves”, for the “survival” of the entire climate ethics’ tree. These include ethics of climate justice:

##### a) Capacity building in Climate Justice

It emphasizes that every person, community and institution has the obligation and potential to solve different climate related challenges locally, nationally and globally.

**b) Performance Justice in Climate Justice**

This insists that, every person, community, and institution need to promote multiple endeavours towards the de-carbonization of our planet.

**c) Equity and Equality in Climate Justice**

It accentuates equal treatment measures with regard to prevention, mitigation, adaptation damage and loss as well as distributions of all benefits and the burdens of climate vulnerability and catastrophes among current and future generations both human and nonhuman.

**d) Democracy and Transparency in Climate Justice**

It calls for a true and open people-based approach for, by and with the people particularly in relevant discussions on critical decisions pertaining to relevant climate change issues particularly at the BOP.

**e) Penal Action in Climate Justice**

This calls for punitive actions or sanctions particularly on violation of multiple injustices or acts against destruction of the environment, climate, and sustainable livelihoods as whole.

**f) Intergenerational Climate Justice**

It underscores the importance of enhancing sustainable action and decisions which promote climate justice, human dignity, and collective wellbeing of future generations both human and nonhuman for millions of years to come.

**g) Functional Climate Justice**

This calls for fair allocation or distribution of limited natural resources as critical and urgent particularly in promoting sustainable solution for climate change challenges.

**h) Participative Climate Justice**

It underscores equitable and honest participative opportunities and rights particularly in decision making on issues related to climate justice with special focus and priority on the individual and local levels.

**i) Restorative Justice in Loss and Damage in Climate Justice**

This demands adequate, rightful, sustainable solutions and reparation mechanisms by perpetrators of climate justice particularly to the victims of climate vulnerabilities locally and globally.

**j) Transformative Justice in Climate Justice**

It underpins the importance of an ongoing interconnected and multiple processes particularly in the entire climate change regime and narrative, consequently, using a holistic procedure and action model in solving the challenges of climate change as a whole.

**k) On Time Justice in Climate Justice**

This underlines the importance of making right decisions and action as rightful and timely solutions in our individual and collective responsibilities to de-carbonize our planet and restore climate justice here and now.

## RECOMMENDATIONS AND CONCLUDING REMARKS

It is now an undeniable scientific and human existential truth that, climate change vulnerability and risks in the AMECEA region are escalating. Their destructive consequences directly and indirectly affect not only the human person's holistic aspects (soul, body, intellect, and morality) but also his/her home ("*oikos*"), economy ("*oikonomia*"), environment ("*oikologia*"), and external religious relationships ("*oikumene*"). Indeed, there is an intrinsic "nexus" between climate change and poverty, illiteracy and diseases/pandemic. On its very core, climate change is profoundly a moral and ethical challenge. Consequently, it does not only call for scientific solutions but for ethical solutions and underpinnings in a multifaceted and interdisciplinary approach. That is, multi-disciplinary, multi-conscience, multi-stakeholder, multi-responsibility and multi-activism (Msafiri 2017, p. 115).

At this juncture, therefore let me unpack some critical broad-spectrum recommendations and pathways:

### **A) ON CLIMATE CHANGE AND COLLECTIVE ECO-EDUCATION AND CAPACITY BUILDING (AWARENESS):**

There is urgent need for individual and collective synergy and collective vision unleashing greater climate change lessons and syllabi, curricula at all levels. This should be compulsory and should start from the pre-primary, primary, secondary, and tertiary levels. A relevant climate justice module, vision, and strategic need also to be directed at the BOP that citizens, communities, societies, families, SCCs, villages, churches, mosques, etc. through seminars, workshops, etc. Again, a multi-stakeholder approach mainstreaming climate change for civic and religious education is key, urgent and important particularly on the tragic effects and risks of climate change.

### **B) ON SUSTAINABLE HUMAN DEVELOPMENT AND ECO-FRIENDLY SMART AND RENEWABLE ENERGIES:**

There is urgent necessity for greater deeper awareness raising and capacity building in integrating energy efficiency and climate knowledge at all strata of society, church, academia, management, politics, technology

etc. Energy transition (“*Energiewende*”) and efficiency revolution are no longer optional! They are imperative. We all need to use solar power, prioritize vegetarian diet styles, avoid plastic, avoid food waste, etc.

**C) ON CLIMATE CHANGE POLICY/ POLICIES IN THE AMECEA REGION:**

There is need to “harmonize” climate change policies by “speaking” and implementing the same climate solutions, particularly on adaption, mitigation, loss, and damage. A new post-mortem and critical reassessment of climate change gaps discrepancies etc. needs to be done.

**D) ON CLIMATE CHANGE ADVOCACY AND LOBBYING:**

There is extreme necessity to spearhead new and effective mechanisms for climate change advocacy and lobbying strategies by different stakeholders and partners at the church, societal and educational levels through social media, preaching, prayers, etc. Engagement by all stakeholders is extremely important. Establishment of climate justice websites for skills training, eco-platforms, eco-clubs, is equally critical.

**E) ON THE ROLE OF CLIMATE FINANCE:**

There is need to coordinate in a very fair, equitable and transparent manner the global and national climate finances priority to be directed to the most vulnerable peoples and communities. Participation of poorest of the poor people at the BOP on decisions of climate financial bodies is essential.

**F) ON CLIMATE CHANGE CAPACITY BUILDING AND GENDER:**

There is urgent need to reconsider gender aspects in the entire climate change discourse. Women and children are the most vulnerable groups hard hit by climate change challenges crises. Also, today there is need to empower climate change “think tanks” and experts in ecclesial and academic circles and levels more than even before. Last, there is a need to develop an interdisciplinary comprehensive manual for climate justice and capacity building for Africa!

## **G) ON CLIMATE CHANGE ACADEMIA AND PROFESSIONALS:**

There is a need to undertake more ethical and value-based qualitative and quantitative interdisciplinary researches particularly on climate justice on the individual, national, ecclesial and regional levels.

## **H) CLIMATE CHANGE AND NEW RE-GREENING AND CARBON FOOTPRINT STRATEGIES BY CHURCHES AND OTHER STAKEHOLDERS:**

There is need to urgently prioritize practical forests' earth keeping traditions liturgies, ceremonies, competitions, etc. Carbon footprint of everyone, particularly church members (Bishops, priests, religious, laity and communities), need to be taken seriously in terms of "Reward and Punishment" approaches. Last, collaborative efforts with climate change NGO's, FBO's, CBO's, etc. in planting and protecting eco-friendly trees at all levels need special and urgent attention and emphasis with "Green Bishops", "Green Politicians", "Green CEOs", "Green Believers", "Green, green, ...."!!!

## **I) ON LIFESTYLE CHANGE:**

Today more than ever before, there is need to practice the virtue of moderation and behavioural lifestyle change. Definitely, this will enhance both the life sustaining values, biodiversity and sustainable livelihoods. Everyone needs to talk about the risks of climate change, pressure politicians into action, reduce use of fossil fuels, individual means of transport and encourage cycling, use of electric trains, cars, etc. Briefly, among others, there is urgent need for AMECEA, Africa and the entire world to radically shift from the current short term life views to efficiency life revolution, from the 'Business-as-Usual syndrome' to collective accountability, from lethal climate change propaganda and indifferentism to climate leadership and finally from climate change to holistic change locally and globally. For more details and relevant information particularly on climate change vulnerabilities and risks from Eastern African perspective in general and Tanzania in particular, the literature below is highly recommended.



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ISBN 978-9976-5674-9-6